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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/658,084
Filing Date: September 09, 2003
Appellant(s): REISDORF ET AL.

Mr. Thomas Steinberg
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on 08-30-05 appealing from the Office action mailed on 12-21-04.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct. As noted in a telephone interview summary, the proposed amendment to the specification on 04-21-05 has been accepted and will be entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

WO 95/14806 A1, drawn to making a carpet, substantially teaches the process recited in the claims. A suitable thermoplastic adhesive taught by WO '806 has a melt-index of less than about 500 dg/min (**with a preferred range of less than about 200 dg/min**) as measured by the procedure of ASTM D-1238 (page 7 full paragraph 1). This melt index range significantly overlaps the recited hot-melting adhesive *"melt index of at least 150"*, which is the main essence of Appellant's invention.

Reith (US 4,39,036), drawn to making a carpet, teaches using 1st and 2nd hot melting adhesive layers for bonding a primary backing to a secondary backing, wherein the 1st hot melting adhesive layer having a viscosity at an activation temperature that *"is sufficiently low that the activated adhesive flows during the finishing step into and around the tuft stitches and the primary backing so that on solidification of the adhesive the tufts are securely bonded in the carpet structure and resist pull-out."* (emphasis added; col. 4 line 61 to col. 5 line 29; col. 6 lines 12-37).

Fink (US 5,288,349), drawn to making a carpet, teaches that *"[h]ot-melt adhesives also must have low enough viscosities at temperatures employed in finishing to achieve good wetting of the backings and sufficient encapsulation of tuft stitches to make the tuft yarns resistant to pull-out, pilling and fuzzing."* (emphasis added; col. 2 lines 59-68)

Scott et al (US 4,798,644) and Cross (US 4,731,143) are cited as further evidence to show that a drum laminator comprising a moving pressing belt in the art of making a carpet.

Kasamatsu (US 4,708,629) is cited to show that it is known in the art to extrude a low viscosity hot-melting adhesive onto a moving fibrous substrate, where an extrusion die is disposed adjacent to the substrate (col. 2 lines 35-56; col. 3 lines 17-37; figure 6).

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-5, 8-15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 95/14806 A1 in view of either Scott et al (US 4,798,644), Reith (US 4,939,036), further in view of Fink (US 5,288,349), and optionally further in view of Cross (US 4,731,143).

With respect to claims 1 and 3, WO '806 discloses a process of making a carpet, the process comprises a) providing a primary backing tufted with nylon yarns; b) extruding a molten ethylene copolymer adhesive having 8-25 wt% of ester groups, 1-20 wt% of carboxylic acid groups, wherein the combined ester and carboxylic acid groups should not comprise more than 35 wt% of the ethylene copolymer (i.e. the copolymer comprises at least 65 wt% of ethylene) onto an underside surface of the primary backing; c) compressing the tufted primary backing and the molten adhesive at a pressure of at least of 2 psi for a time range of 1-10 seconds *"to encapsulate the bases of the yarn tufts"*; and, d)

cooling the tufted primary backing and the ethylene adhesive to solidify the adhesive; wherein a melt index of the adhesive is less than about 500 dg/min (with **a preferred range of less than about 200 dg/min**) as measured by the procedure of ASTM D-1238 (abstract; page 2 line 31 to page 3 line 37; page 4 line 12 to page 6 line 29; page 7 full paragraph 1; page 9 line 8 page 10 line 24; claims 1-7).

As for the recited melt index of "at least 150" for the recited molten polymer adhesive, it would have been obvious in the art to use a molten thermoplastic adhesive in a process taught by WO '806, where a melt index of the adhesive is around 150-500 dg/min, because: a) as noted above, a suitable thermoplastic adhesive taught by WO '806 has a melt-index of less than about 500 dg/min (with a preferred range of less than about 200 dg/min) as measured by the procedure of ASTM D-1238 (page 7 full paragraph 1); b) Reith teaches using 1st and 2nd hot melting adhesive layers for bonding a primary backing to a secondary backing, wherein the 1st hot melting adhesive layer having a viscosity at an activation temperature that *"is sufficiently low that the activated adhesive flows during the finishing step into and around the tuft stitches and the primary backing so that on solidification of the adhesive the tufts are securely bonded in the carpet structure and resist pull-out."* (emphasis added; col. 4 line 61 to col. 5 line 29; col. 6 lines 12-37, 59-65); and, c) Fink teaches that *"[h]ot-melt adhesives also must have low enough viscosities at temperatures employed in finishing to achieve good wetting*

of the backings and sufficient encapsulation of tuft stitches to make the tuft yarns resistant to pull-out, pilling and fuzzing." (emphasis added; col. 2 lines 59-68).

WO '806 does not teach using a drum laminator comprising a moving belt for compressing a tufted primary backing and an ethylene adhesive. However, it would have been obvious in the art to use a drum laminator comprising a moving belt for compressing a tufted primary backing and an ethylene adhesive together, as such is conventional in the art of making carpets as exemplified in the teachings of Scott et al (col. 5 lines 11-28; figure 1) and Reith (abstract; col. 11 lines 4-14). Optionally, Cross is cited as further evidence that it is well known and conventional in the carpet making art to use a drum laminator comprising a moving pressing belt (abstract; figure 1)

With respect to claims 2 and 9, see page 9 lines 8-34 of the WO '806 patent and figure 1 of the Scott et al patent. As for claim 9, it is a notoriously common practice in the art to provide a reinforcing grid between a tufted primary backing and a secondary backing.

With respect to claims 4-5, see column 5 lines 12-28 of the Scott et al and column 3 lines 24-31 of the Cross patent. Note: the recited operating conditions are taken to be result effective variables routinely optimized by those versed in the art.

With respect to claim 8, the recited extrusion temperature is also taken to be a result effective variable. An operating extrusion temperature clearly depends on a number of factors such as polymer viscosity, polymer melting range, etc.

With respect to claims 10-11 and 14-15, see page 6 lines 4-11 (ester: n-butyl (methacrylate or acrylate); carboxylic acid: methacrylic or acrylic acid). As for claims 14-15, see page 7 full paragraph 1. The recited melt index in these claims is reasonably expected to flow naturally from an adhesive taught by WO '806 in view of the similarity of the adhesive compositions.

With respect to claims 12-13, see page 3 lines 10-18 and page 6 lines 30-39 of the WO '806. The copolymer compositions recited in these claims are taken to be conventional in the art.

With respect to claim 18, as noted in the prior office action, WO '806 teaches compressing the tufted primary backing and the molten adhesive at a pressure of at least of 2 psi for a time range of 1-10 seconds *"to encapsulate the bases of the yarn tufts".*

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references set forth above as applied to claim 1 above, and further in view of Kasamatsu (US 4,708,629).

WO '806 discloses extruding a hot-melting adhesive to a secondary backing and bonding the adhesive coated secondary backing to a primary backing to form a carpet (page 3 full paragraph 2). WO '806 does not teach extruding a hot-melting adhesive onto an underside surface of a primary backing of a carpet at a distance of less than 5 cm. However, such would have been obvious in the art, because: a) it is old in the art to extrude a low viscosity hot-melting adhesive onto a continuously moving substrate such as a cloth, where an extrusion die is

positioned such that it almost touches the moving substrate (col. 2 lines 35-56; col. 3 lines 17-37; figure 5); and, b) it is also well known in the art to extrude a hot-melting adhesive onto an underside surface of primary backing of a carpet. A preference on whether to extrude a hot-melting adhesive onto an underside surface of a primary backing or onto a bonding surface of a secondary backing is taken to be well within purview of choice in the art.

(10) Response to Argument

On page 4, Appellant argues that, a thermoplastic adhesive of WO '806 has a *""relatively high melt viscosity" (col. 7, lines 7-9), but a range of melt indices from 2-500 dg/min (page 7, lines 11-15). In contrast, the molten polymer adhesive of the present invention are claimed to have melt indices at least 150. While this apparent overlap in melt index ranges would appear to establish a prima facie case of obviousness to the present claims, the Board's attention is directed to* In re Peterson ..." (emphasis added, quotation in original, and the phrase *"prima facie"* originally italicized). Accordingly, Appellant can rebut a prima facie case of obviousness by showing the prior art teaches away from the claimed invention. Accordingly, since WO '806 teaches using a molten adhesive having a viscosity which is sufficiently high to prevent the adhesive from flowing as rapidly into a secondary backing, WO '806 teaches away from using a low viscosity adhesive. First of all, it is worthnoting that, the Board has been affirmed in In re Peterson. In addition, the phrase *""relatively high melt viscosity"* is a relative term. It could be that, WO '806 considers a hot melting adhesive with a melt index of up to 500

dg/min as having a ""*relatively high melt viscosity*". Examiner agrees with the court. "*... the existence of overlapping or encompassing ranges shifts the burden to the applicant to show that his invention would not have been obvious ...*".. In present case, the claimed melt indices of **at least 150** for a hot-melting adhesive significantly overlaps with the melt-indices of a hot-melting adhesive taught by WO '806, which ranges from 2 to 500, and preferably less than 200. Therefore, the burden shift to Appellant by showing for example unexpected benefit/result regarding the claimed melt-indices in order to provide a showing of non-obviousness. However, Appellant has failed to provide positively an objective evidence which is commensurate with the scope of the recited claims. While claimed invention broadly requires a melt index of at least 150, only a single melt index of 400 was tested. Equally important, in comparing a closest prior art (WO '806), only melt indices which fall within the most preferred melt index of 2-50 was tested. No test was made on even a preferred melt index range of less than 200, say 175. As for the alleged problem of a relatively viscosity hot-melting adhesive flowing into a secondary backing, **while not needed**, one could readily obviate this alleged problem by simply using a two-layer hot-melting adhesive similar to the one suggested by Reith. As noted above, Reith discloses using 1st and 2nd hot melting adhesive layers for bonding a primary backing to a secondary backing, wherein the 1st hot melting adhesive layer having a viscosity at an activation temperature that "*is sufficiently low that the activated adhesive flows during the finishing step into and around the tuft stitches and the primary backing*

so that on solidification of the adhesive the tufts are securely bonded in the carpet structure and resist pull-out." (emphasis added; col. 4 line 61 to col. 5 line 29; col. 6 lines 12-37, 59-65). Moreover, Reith further discloses using a hot-melting adhesive comprising a lower viscosity layer *"to promote good tuft encapsulation and tuft-bind strength"*, and a higher viscosity layer *"to prevent bleedthrough of the lower viscosity adhesive into the secondary backing during the lamination process"* (col. 4 lines 43-55). Equally important, is Counsel suggesting that, WO '806 teaches away from using a molten adhesive which has a melt index of around 500 dg/min or a preferred melt index of around 200 dg/min ? If so, why then WO '806 expressly teaches using a molten thermoplastic adhesive which has a melt index of up to around 500 dg/min, with a preferred range of less than 200 dg/min?

On page 5, Appellant argues that *"... adhesive with a melt index greater than 150 ... it is difficult to apply uniform layer ... polymers tend to run rather than forming uniform films. It has been found that such low viscosity polymer adhesive can still be uniformly applied ... if the distance that the molten adhesive travels from extrusion die ... is kept at less than 5 cm ..."*. It is respectfully submitted that, Counsel's arguments are not commensurate with the recited claims. None of the recited claims positively require applying a uniform layer of adhesive. Moreover, none of the recited claims except claim 16 requires using an extrusion die where a distance between the die and carpet backing is kept at less than 5 cm. Equally important, an application of the recited adhesive extrusion applicator would have

been obvious in the art since it is old in the art to extrude a low viscosity hot-melting adhesive onto a continuously moving substrate such as a cloth, where an extrusion die is positioned such that it almost touches the moving substrate (col. 2 lines 35-56; col. 3 lines 17-37; figure 5); and, b) it is also well known in the art to extrude a hot-melting adhesive onto an underside surface of primary backing of a carpet. A preference on whether to extrude a hot-melting adhesive onto an underside surface of a primary backing or onto a bonding surface of a secondary backing is taken to be well within purview of choice in the art.

On page 5 last paragraph to page 6, Appellant argues that there is no reasonable expectation of success, since a most preferred range of melt indices for a thermoplastic adhesive taught by WO '806 is 2-50 dg/min, and the melt indices in example 1 is 10 dg/min and in examples 2-4 are 35 dg/min. Appellant further argues that, *"WO '806 discloses a very broad range of possible melt indices ... it is unclear at what melt index their resin begin to fail the requirement quoted above"*. While the melt indices for an adhesive of WO '806 may relatively cover over a broad range, this does not change the fact that, the preferred melt indices of a hot melt adhesive significantly overlaps the recited melt indices of at least 150. It is respectfully submitted, the presently recited melt index is even broader, since it is open-ended. Moreover, the rejection is not based solely on the disclosure of WO '806. As noted above, both Reith and Fink suggest strongly using a low viscosity hot melting adhesive to enhance the performance of a finished carpet. Moreover, Reith expressly teaches using 30-40 wt% of

polyethylene-vinyl acetate resin for a low viscosity adhesive layer; wherein this resin **has a melt-index range of about 100-400 dg/min** (col. 7 lines 26-51). Note: this melt index range significantly overlaps the recited melt indices of at least 150.

On page 6 last paragraph to page 7 line 4, Appellant argues that, the claimed melt-indices constitute a sub-genus, while the melt indices of WO '806 constitute a genus. Examiner strongly disagrees. The end point (i.e. 500 dg/min) of melt-indices taught by WO '806 falls within the claimed melt-indices. In fact, as noted earlier, the melt-indices of a hot-melting adhesive taught by WO '806 is narrower than the recited melt-indices of an adhesive, because the recited melt-indices is open-ended, while an adhesive of WO '806 has a maximum melt-index of about 500 dg/min.

On page 7 2nd to the last paragraph, Appellant argues that *"... the Reisdorf Declaration, it can be seen that the closest prior art examples, i.e. tufted carpets made using the high viscosity polymer adhesives of the WO '806 examples, do not achieve a stated goal of the present application, i.e. "to impregnate the fiber networks of the tufts and contact the overwhelming majority of the fibers in the tufts (page 10, lines 5-7)."* (emphasis in original). First of all, an objective evidence of non-obviousness must be commensurate in scope with the claims. Here the claims were of much broader scope (i.e. melt index of at least 150) than an ONLY tested melt index of 400. There is no adequate basis for reasonably concluding that the great number and variety of melt indices as a class included

in the claims would behave in the same manner as the ONLY tested melt index of 400. Moreover, Counsel is apprised that, a disclosure of a prior art reference is not limited to working examples or the most preferred embodiment, but rather should be evaluated on what the reference as a whole would have suggested to one in the art. Appellant even failed to test a hot-melting adhesive of a preferred hot melting index of less than 200 (say 175). Furthermore, obviousness may exist although teachings relied upon may be disclosed in the art as non-preferred or unsatisfactory for the intended purpose. In re Boe, 53 CCPA 1079; 355 F2d 961; 158 USPQ 507. In re Smith, 32 CCPA 959; 148 F2d 351; 65 USPQ 167. In re Nehrenberg, 47 CCPA 1159; 280 F2d 161; 126 USPQ 383. In re Watanabe, 50 CCPA 1175; 315 F2d 924; 137 USPQ 350.

As for Appellant's arguments on pages 7-10 regarding the Scott et al, Reith and Cross patents, it would appear that, Counsel is resorting to piece-meal analysis of the applied references. What is critical on the issue of patentability under 35 U.S.C. 103(a) is *"what would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the sum of all the relevant teachings in the art, not in view of the first one and then another of the isolated teachings in the art."* In re Kuderna, 165 USPQ 575 (CCPA 1970). As for appellant's argument regarding the Reith patent not using at least 85 wt% of a low viscosity polymer adhesive, it should be noted that, WO '806 (the primary reference) teaches using a hot melting adhesive *"consisting essentially of an ethylene copolymer"* having 8-25 wt% of ester groups, 1-20 wt% of carboxylic

acid groups, wherein the combined ester and carboxylic acid groups should not comprise more than 35 wt% of the ethylene copolymer (i.e. the copolymer comprises at least 65 wt% of ethylene). Moreover, a preferred melt index range disclosed by WO '806 is less than 200. This overlaps significantly with the recited melt index range of at least 150. On page 9 2nd full paragraph, Appellant argues that Reith discloses using an adhesive *"in sheet form"* (quotation in original). However, WO '806 (i.e. the primary reference) teaches extruding a molten hot-melting adhesive onto a backing of a carpet. Moreover, while a two-layered adhesive of Reith is in sheet form, a 1st adhesive layer of the adhesive (once heat-activated) has a relative low viscosity. On page 9 full paragraph 2, Counsel argues that a preferred melt index of about 15 to about 30 g/10 minutes disclosed by Reith falls within a preferred range of 2-50 dg/min disclosed by WO '806. While Appellant is correct, Reith also teaches *"[a]nother preferred adhesive composition"* where an EVA based adhesive *"has a melt index of about 100 to about 400 grams per ten minutes"* (col. 7 lines 26-51; claim 3).

On page 9 last paragraph, Appellant argues that *"... Fink discloses that polyethylene copolymers having acrylic acid and ... commoners have poor bond strength when used at 100% as hot melt adhesives for polypropylene primary backings ... which in essence teaches away from the presently claimed invention"* (emphasis added). First of all, the recited adhesive composition in the claims is taught by WO '806 which is the primary reference. Moreover, the claims as presently recited do not require using 100% polyethylene copolymers having

acrylic acid (i.e. only require using at least 85% by weight). Equally important, while *"Fink discloses that polyethylene copolymers having acrylic acid and ... commoners have poor bond strength when used at 100% as hot melt adhesives for polypropylene primary backings"*, it is NOT necessary to use a polypropylene primary backing in WO '806. In fact, a primary backing of WO '806 is made from *"... natural or synthetic materials, examples of which are jute, wool, rayon, polyamides, polyesters and polyolefins."* (page 4 full paragraph 2).

As for a declaration made by Mr. Reisdorf, as noted above, WO '806 teaches using a thermoplastic adhesive having melt indices of less than 500 dg/min and a preferred range of less than about **200 dg/min**. Counsel is again apprised that, a prior art reference is not confined to working examples or the most preferred embodiment in a disclosure, but rather should be evaluated on what the reference as a whole would have suggested to one in the art. It is respectfully submitted that, a resultant carpet using an adhesive taught by WO '806 with a melt index of (say) 450 dg/min, if tested according Lisson Tretrad fiber retention test, would readily obtain a rating of category 4. Moreover, Appellant failed to even make any test on a preferred melt index range of less than 200 dg/min, say 175 dg/min. As for numbered paragraph 9 of the declaration, this should be expected, because, as noted above, a) Reith teaches using 1st and 2nd hot melting adhesive layers for bonding a primary backing to a secondary backing, wherein the 1st hot melting adhesive layer having a viscosity at an activation temperature that *"is sufficiently low that the activated adhesive flows during the*

finishing step into and around the tuft stitches and the primary backing so that on solidification of the adhesive the tufts are securely bonded in the carpet structure and resist pull-out." (col. 4 line 61 to col. 5 line 29; col. 6 lines 12-37); and b) Fink teaches that *"[h]ot-melt adhesives also must have low enough viscosities at temperatures employed in finishing to achieve good wetting of the backings and sufficient encapsulation of tuft stitches to make the tuft yarns resistant to pull-out, pilling and fuzzing."* (col. 2 lines 59-68).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Sam Chuan Yao

SAM CHUAN YAO
PATENT EXAMINER

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